

MENU

SEARCH

INDEX

1/1



## JAPANESE PATENT OFFICE

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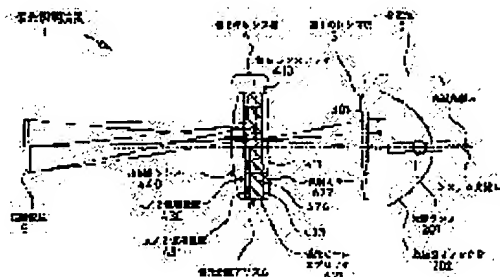
(30)Priority

Priority number: **07 50175** Priority date: **09.03.1995** Priority country: **JP**(54) **POLARIZED LIGHT ILLUMINATOR AND PROJECTION TYPE DISPLAY DEVICE**

(57)Abstract:

**PURPOSE:** To constitute a miniaturized and compact polarized light illuminator where an integrator optical system and a polarized light conversion optical system are combined and whose light utilization efficiency is high.

**CONSTITUTION:** This polarized light illuminator 1 is provided with a light source part 2 emitting light whose polarization direction is random, a 1st lens plate 3 constituted of plural rectangular condenser lenses whose outside shape is rectangular and condensing the light emitted from the light source so that plural secondary light source images may be formed, and a 2nd lens plate 4 placed near a position where the plural secondary light source images are formed and equipped with a condenser



lens array, a polarized light separation prism array 420, a  $\lambda/2$  phase difference plate 430, and an emitting side lens 440. In a stage where the minute secondary light source image is formed by the 1st lens plate 3 constituting the integrator optical system, polarized light is separated.

Therefore, since the spatial spread of an optical path associated with the separation of the polarized light is restrained, the illuminator 1 is miniaturized though it is provided with the polarized light conversion optical system.

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**MENU**

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**INDEX**